

ABSTRACT OF THE DISCLOSURE

Ultrafine powders of  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  with particles in the size range of 25 – 500 nm. The average size of particles is about 500 nm or less, preferably about 300 nm or less.

- 5 The particles are composed of nanocrystallites, which have an average size about 30 nm. This invention also includes the method of producing these ultrafine  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  particles. The process utilizes (i) nanoparticles of  $\text{TiO}_2$ , (ii) a lithium salt, and (iii) an organic solvent with a boiling point in the range of 70 – 230° C. The process is carried out at pressures in the range of 0.5 to 10 atmospheres. The inorganic salt of Li is mixed with
- 10  $\text{TiO}_2$  nanoparticles (~ 20 - 25 nm) in the organic solvent. The solution is heated to a temperature and at a pressure to facilitate the diffusion of Li ions in to nanoparticles. After completion of the reaction, the powder is heat treated in  $\text{O}_2$  or an inert gas to form the desired phase.